



# Implementing Cisco Service Provider Advanced Routing Solutions (SPRI) v1.0

## Objetivos

After taking this course, you should be able to:

- Describe the main characteristics of routing protocols that are used in Service provider environments
- Implement advanced features of multiarea Open Shortest Path First (OSPFv2) running in Service Provider networks
- Implement advanced features of multilevel Intermediate System to Intermediate System (ISIS) running in Service Provider networks
- Configure route redistribution
- Configure Border Gateway Protocol (BGP) in order to successfully connect the Service Provider network to the customer or upstream Service Provider
- Configure BGP scalability in Service Provider networks
- Implement BGP security options
- Implement advanced features in order to improve convergence in BGP networks
- Troubleshoot OSPF, ISIS, and BGP
- Implement and verify MPLS
- Implement and troubleshoot MPLS traffic engineering
- Implement and verify segment routing technology within an interior gateway protocol
- Describe how traffic engineering is used in segment routing networks
- Implement IPv6 tunneling mechanisms
- Describe and compare core multicast concepts
- Implement and verifying the PIM-SM protocol
- Implement enhanced Protocol-Independent Multicast - Sparse Mode (PIM-SM) features
- Implement Multicast Source Discovery Protocol (MSDP) in the interdomain environment
- Implement mechanisms for dynamic Rendezvous Point (RP) distribution

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## Pre-requisitos

Before taking this course, you should have the following knowledge and skills:

- Intermediate to advanced knowledge of Cisco Internetwork Operating System (Cisco IOS®) or IOS XE and Cisco IOS XR Software configuration
- Knowledge of IPv4 and IPv6 TCP/IP networking
- Intermediate knowledge of BGP, OSPF, and ISIS routing protocols
- Understanding of MPLS technologies
- Understanding of multicast technologies

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- Familiarity with segment routing

The following Cisco courses can help you gain the knowledge you need to prepare for this course:

- **Building Cisco Service Provider Next-Generation Networks Part 1 (SPNGN1)**
- **Building Cisco Service Provider Next-Generation Networks Part 2 (SPNGN2)**
- **Deploying Cisco Service Provider Network Routing (SPROUTE)**
- **Implementing and Administering Cisco Solutions (CCNA®)**
- **Understanding Cisco Service Provider Network Foundations (SPFNDU)**
- **Implementing and Operating Cisco Service Provider Network Core Technologies (SPCOR)**

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## Contenido

- Implementing and Verifying Open Shortest Path First Multiarea Networks
- Implementing and Verifying Intermediate System to Intermediate System Multilevel Networks
- Introducing Routing Protocol Tools, Route Maps, and Routing Policy Language
- Implementing Route Redistribution
- Influencing Border Gateway Protocol Route Selection
- Scaling BGP in Service Provider Networks
- Securing BGP in Service Provider Networks
- Improving BGP Convergence and Implementing Advanced Operations
- Troubleshooting Routing Protocols
- Implementing and Verifying MPLS
- Implementing Cisco MPLS Traffic Engineering
- Implementing Segment Routing
- Describing Segment Routing Traffic Engineering (SR TE)
- Deploying IPv6 Tunneling Mechanisms
- Implementing IP Multicast Concepts and Technologies
- Implementing PIM-SM Protocol
- Implementing PIM-SM Enhancements
- Implementing Interdomain IP Multicast
- Implementing Distributed Rendezvous Point Solution in Multicast Network

## Laboratorio

- Implement OSPF Special Area Types (IPv4 and IPv6)
- Implement Multiarea IS-IS
- Implement Route Redistribution

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- Influence BGP Route Selection
  - Implement BGP Route Reflectors
  - Implement BGP Security Options
  - Troubleshoot Routing Protocols
  - Implement MPLS in the Service Provider Core
  - Implement Cisco MPLS TE
  - Configure and Verify Interior Gateway Protocol (IGP) Segment Routing
  - Implement Tunnels for IPv6
  - Enable and Optimize PIM-SM
  - Implement PIM-SM Enhancements
  - Implement Rendezvous Point Distribution
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